Dates – Reference Guide
Version 1.0, December 1999

Summary: Dates

Definition

Dates of various types of events.

Data Storage and Field Values

There are 3 data elements used to define the data concept Dates as related to the need to collect dates in full format ("month/day/year" are all collected), as well as in partial format ("month/year" or "year" alone are collected). Note that variable names are generically described as related to applying the Date data concept to dates of various events. Throughout this Appendix, the date components of month, day, and year are represented as follows:

Month:	MM, where MM is 2 characters with values ranging from 01–12
Day:	DD, where DD is 2 characters with values ranging from 01–31
Year:	YYYY, where YYYY is 4 characters with values ranging from 0001–9998

Dates storing "month/day/year"

Variable Name:	*Assigned based on the associated data element variable name*
Type:	character
Length:	8
Reported to CDC:	TBD
Storage Format:	YYYYMMDD (actual storage format)
Display Format:	MM/DD/YYYY (cosmetic format on forms/entry screens)
Field Values:	Year – 0001-9998 Month – 01-12 Day – 01-31

Dates storing "month/year"

Variable Name:	*Assigned based on the associated data element variable name*
Type:	character
Length:	6
Reported to CDC:	TBD
Storage Format:	YYYYMM (actual storage format)
Display Format:	MM/YYYY (cosmetic format on forms/entry screens)
Field Values:	Month – 01-12 Day – 01-31

Dates storing "year"

Variable Name:	*Assigned based on the associated data element variable name*
Type:	character
Length:	4
Reported to CDC:	TBD
Storage Format:	YYYY (actual storage format)
Display Format:	YYYY (cosmetic format on forms/entry screens)
Field Values:	0001-9998

Missing Values

If the value of the Date data element is missing, or does not adhere to the CIPHER standard, the data element may be noted as blank to indicate a missing value. If the program requires the reason the value is missing, a separate 1-character field should be used to note the reason for the missing data. The use of a Missing Value Reason data element must adhere to the CIPHER definition and rules associated with missing data as described in Appendix I - Missing Value Reason. The use of an MVR applies only when all data components are missing. If there is at least 1 non-blank component, Missing is not applicable.

Special Note on Rules Associated with Unknown Date Components

Blanks are used to represent unknown date components. However, only certain combinations of known and unknown date components are valid in the CIPHER date definition. Refer to the Data Processing portion of the Implementation subsection, below, for detailed information.

Processing Overview

Special requirements apply. Refer to the Implementation subsection on Data Processing: Validations and Edit Checks, below, for detailed information.

EDI Summary

Note: EDI sections are under construction.

Discussion

Dates reflecting various types of events in a person's life, as they relate to public health, are collected, reported, and analyzed through information systems designed and implemented by CDC to support surveillance for specific diseases and adverse health conditions. For example, date of birth, date of diagnosis, date of treatment/intervention, date of death, and the date on which a particular condition was reported to agencies are among the types of dates commonly supported in surveillance-based systems.

In several CDC surveillance systems, dates are often collected in partial format. That is, in addition to collection of dates noting the "month/day/year," several programs support collection of "month/year" as well as "year" alone. Therefore, the CIPHER Date definition has several date "approaches."

Another important feature of many CDC surveillance systems is support of missing or unknown date components. Full dates can be entirely missing (month, day, and year unknown) or partially missing (day unknown, but month and year known; or day and month unknown, but year known). Month/Year fields can be coded either with month and year known, or with month unknown but year known. For this reason, the CIPHER date definition adheres to a *character* format.

A majority of the management of Date data will be performed through the system control for the Date data concept. The system control provides entry controls supporting character format dates as well as entry of missing date components. In addition, a number of Date Functions are provided for use with analysis of dates stored in character format. The Date Functions are intended to be a common software component shared across programs to support consistency and reuse, and to facilitate analysis and comparison of date data stored in character format. Further, the functions support missing components. For more information on other features available through the Date control, refer to the System Architecture Guide.

Implementation: Dates

The implementation examples noted below are described using generic field labels and variables names as related to applying the Date data concept to dates of various events. The implementation for a specific use of Date can be patterned after these generic implementation examples.

Data Collection: Hardcopy Report Form

One hardcopy "pre-formatted" field is associated with each date element. The pre-formatted hardcopy field reflects a standard calendar-type date in which date components are separated with a forward slash (/). That is, date fields are noted on the report forms (and entry screens) in the more common "calendar" order and format of MM/DD/YYYY (for report and entry of full month/day/year type dates) and MM/YYYY (for report and entry of partial month/year type dates), but are stored in YYYYMMDD format (for storage of full month/day/year type dates) and in YYYYMM format (for storage of partial month/year type dates), respectively. (For more information on date storage methods, refer to the Data Processing subsection below.)

Three types of hardcopy form field styles are described in this section. These support the three date collection approaches documented throughout this Appendix, and include fields to support the following three date collection approaches:

- Dates collected in "month/day/year" format
- Dates collected in "month/year" format
- Dates collected in "year" format

Dates collected in "month/day/year" (full format) **– Hardcopy Form**
A pre-formatted field is used on all hardcopy data collection forms for collection of full format dates. The field is formatted with 2 characters for the month component, followed by a slash (component separator), 2 characters for the day component, followed by a slash (component separator), and 4 characters for the year component. In summary, the pre-formatted hardcopy field is structured as follows: MM/DD/YYYY

Dates collected in "month/year" (partial format) **– Hardcopy Form**
A pre-formatted field is used on all hardcopy data collection forms for collection of these partial format dates. The field is formatted with 2 characters for the month component, followed by a slash (component separator) and 4 characters for the year component. In summary, the pre-formatted hardcopy field is structured as follows: MM/YYYY

Dates collected in "year" (partial format) **– Hardcopy Form**
A pre-formatted field is used on all hardcopy data collection forms for collection of this partial format date. The field is formatted with 4 characters for the year component, and is structured as follows: YYYY

Refer to Figures 1 through 3 below for examples of hardcopy report form sections used for the purposes of date data collection.

Figure 1: **Blank Hardcopy Form section used to collect dates. Note that example includes all three types of date formats: month/day/year, month/year, and year**

Dates - Hardcopy Report Form

Enter date in month/day/year format: ___/___/_____
(generic date of event field)

Enter date in month/year format: ___/_____
(generic date of event field)

Enter year: _____
(generic date of event field)

Figure 2: **Completed Hardcopy Form section used to collect dates, where all date components are known. Note that example includes all three types of date formats: month/day/year, month/year, and year**

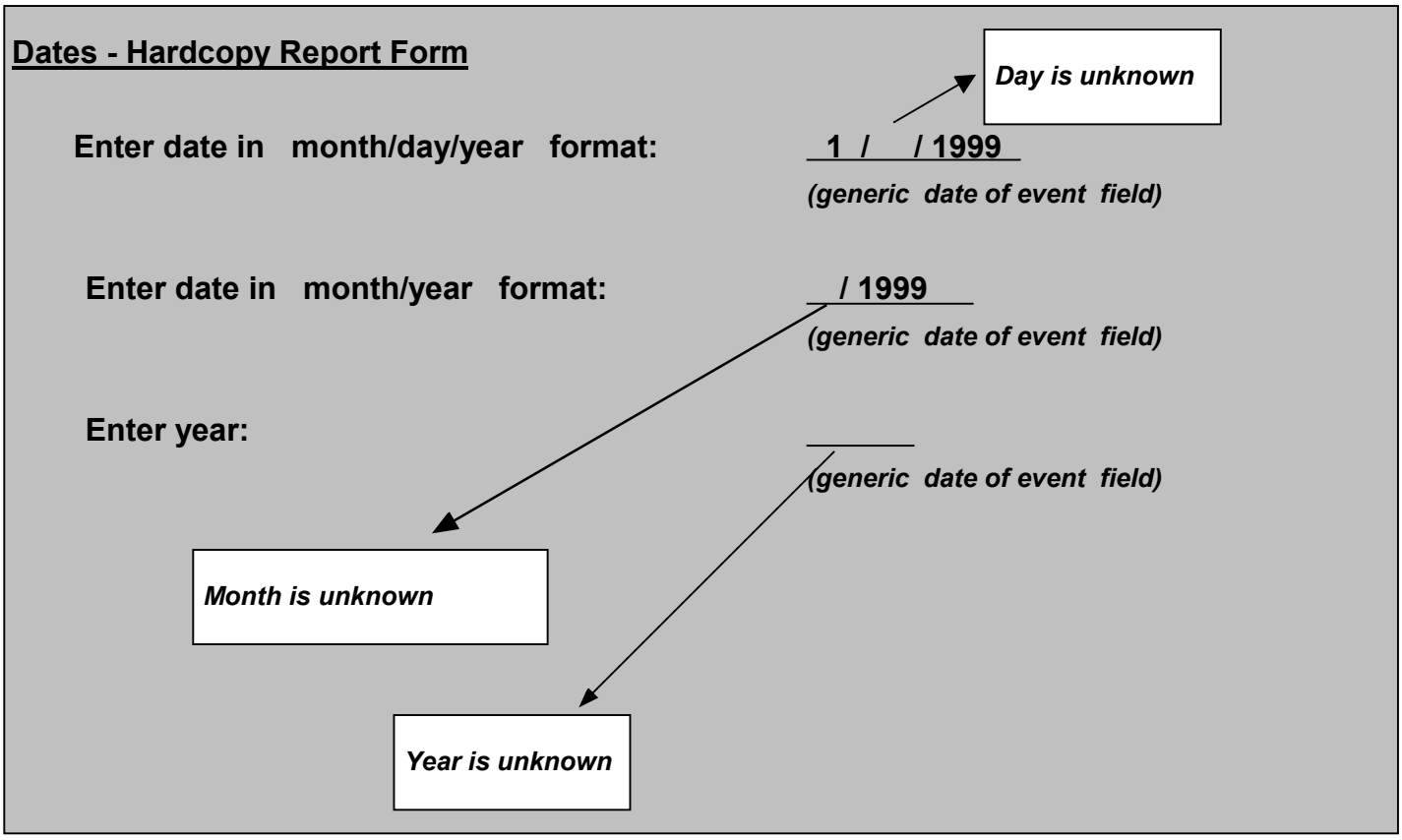
Dates - Hardcopy Report Form

Enter date in month/day/year format: 1 / 30 / 1999
(generic date of event field)

Enter date in month/year format: 1 / 1999
(generic date of event field)

Enter year: 1999
(generic date of event field)

Figure 3: **Completed Hardcopy Form section used to collect dates, where some of the date components are unknown. Note that example includes all three types of date formats: month/day/year, month/year, and year.**



Data Entry: Electronic Form(s)

One entry screen field or variable is associated with each date element. The *cosmetic* format and structure of the screen field parallels the hardcopy report form in that entry of the date uses a standard calendar-type format, with a forward slash to separate date components (/). That is, date fields are noted on the entry screens (and hardcopy report forms) in the more common "calendar" order and format of MM/DD/YYYY (for report and entry of full month/day/year dates) and MM/YYYY (for report and entry of partial month/year dates).

However, the entered date data are stored in reverse order as YYYYMMDD (for storage of full month/day/year dates) and as YYYYMM (for storage of partial month/year dates), respectively. Date elements consisting only of the Year component are an exception in that the format of this partial date on the report form, entry screen, and in database storage is consistently set to YYYY. For more information on date storage methods, refer to the Data Processing subsection in this Appendix.

This section illustrates the entry screen styles associated with the various date approaches that make up the CIPHER date concept, as well as the link to the "behind the scenes" storage used for each CIPHER date approach. Basically, there are three types of entry screen field styles described in this section. These support the three date collection approaches documented throughout this appendix, and include fields to support the following three date collection approaches:

- Dates collected in "month/day/year" format
- Dates collected in "month/year" format
- Dates collected in "year" format

Dates Collected in "month/day/year" (full format) – Electronic Form Overview
A pre-formatted field is used on all electronic entry screens for collection of full format dates. The field is visually formatted with 2 characters for the month component, followed by a hard-coded slash (component separator), 2 characters for the day component, followed by a hard-coded slash (component separator), and 4 characters for the year component. The component separator (/) is fixed and is automatically bypassed during key entry of these three date components (month, day, and year).

In summary, the full date electronic screen entry field is *cosmetically* displayed on the screen in MM/DD/YYYY format; key entered in three screen entry fields (MM/DD/YYYY) storing MM (2-character month), DD (2-character day), and YYYY (4-character year); and stored in YYYYMMDD format in the associated database.

Dates collected in "month/year" (partial format) – Electronic Form Overview
A pre-formatted field is used on all electronic entry screens for collection of partial format dates consisting of month and year data. The field is visually formatted with 2 characters for the month component, followed by a hard-coded slash (component separator) and 4 characters for the year component. The component separator (/) is fixed and is automatically bypassed during key entry of these two date components (month and year). In summary, the partial date electronic screen entry field is *cosmetically* displayed on the screen in MM/YYYY format, key entered in two screen entry fields (MM/YYYY) storing MM (2-character month) and YYYY (4-character year), and stored in YYYYMM format in the associated database.

Dates collected in "year" (partial format) – Electronic Form Overview
A single 4-character field is used on all electronic entry screens for collection of partial format dates consisting only of year data. The electronic screen entry field is *cosmetically* displayed on the screen in YYYY format, key entered in one field

(YYYY) storing the 4-character year, and stored in YYYY format in the associated database.

Ideas/Tips for Electronic Data Entry Shortcuts

A majority of the management of electronic entry of Date data can be performed through the system control for the Date data concept. The system control provides entry controls supporting character format dates as well as entry of missing date components. Note that entry routines can be set up so that the entry operator automatically advances from one component to the next. For example, once the entry operator enters a number in the "month" component, the cursor can automatically advance and position to the "day" component.

The entry routines can also be set up so that single digits entered in the "month" and "day" component are automatically right justified with leading zeros inserted. For example, if the entry operator enters "9" in the "month" component and presses <Enter>, the entry program can automatically re-format the "9" to "09" and advance the operator to the "day" component.

Similarly, the entry program can choose to adjust a 2-character entry year and prefix the appropriate century notation based on the value of the 2-character entry. That is, if the operator enters a year value in the range 01-09, this more than likely reflects a year in the 2000s and not the 1900s, whereas a value in the range 10-99 more than likely reflects a year in the 1900s and not the 2000s. For example, if the entry operator enters "98" in the "year" component, followed by <Enter>, the entry program can automatically re-format the "98" to "1998" and save the entry operator a few keystrokes. Of course, there are some date fields (such as birth date) for which such assumptions about appropriate century cannot be made.

For more information on entry control features, refer to the Date control documentation within the System Architecture Guide.

Refer to Figures 4 through 6 below for examples of electronic entry screens used for the purposes of Date data collection.

Figure 4: **Blank Electronic Form used to collect dates. Note that example includes all three types of date formats: month/day/year, month/year, and year.**

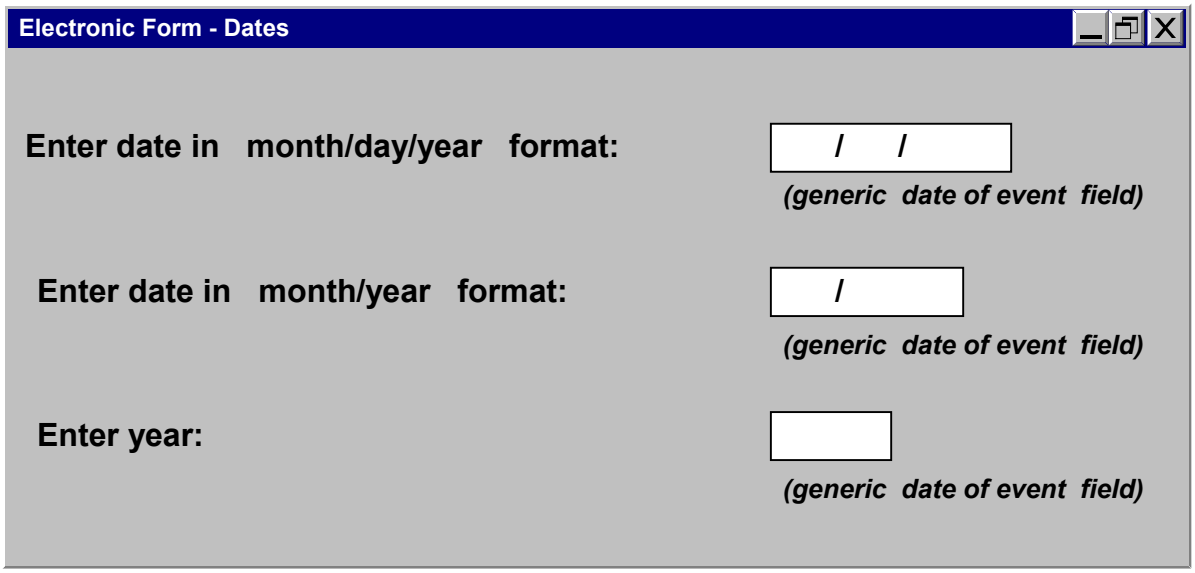


Figure 5: **Completed Electronic Form used to collect dates where all date components are known. Note that example includes all three types of date formats: month/day/year, month/year, and year.**

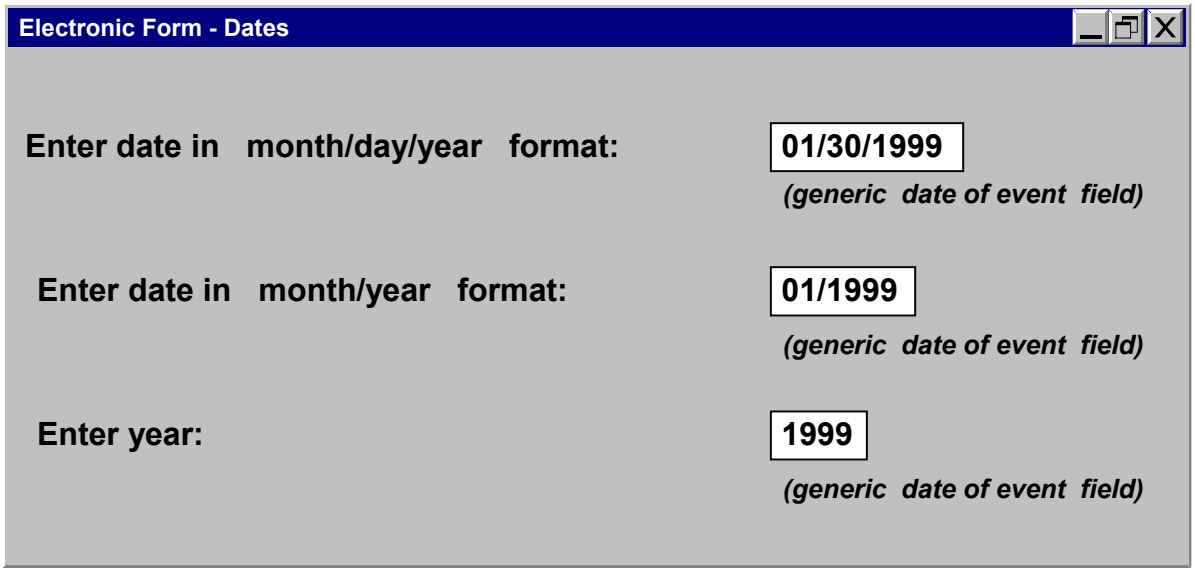
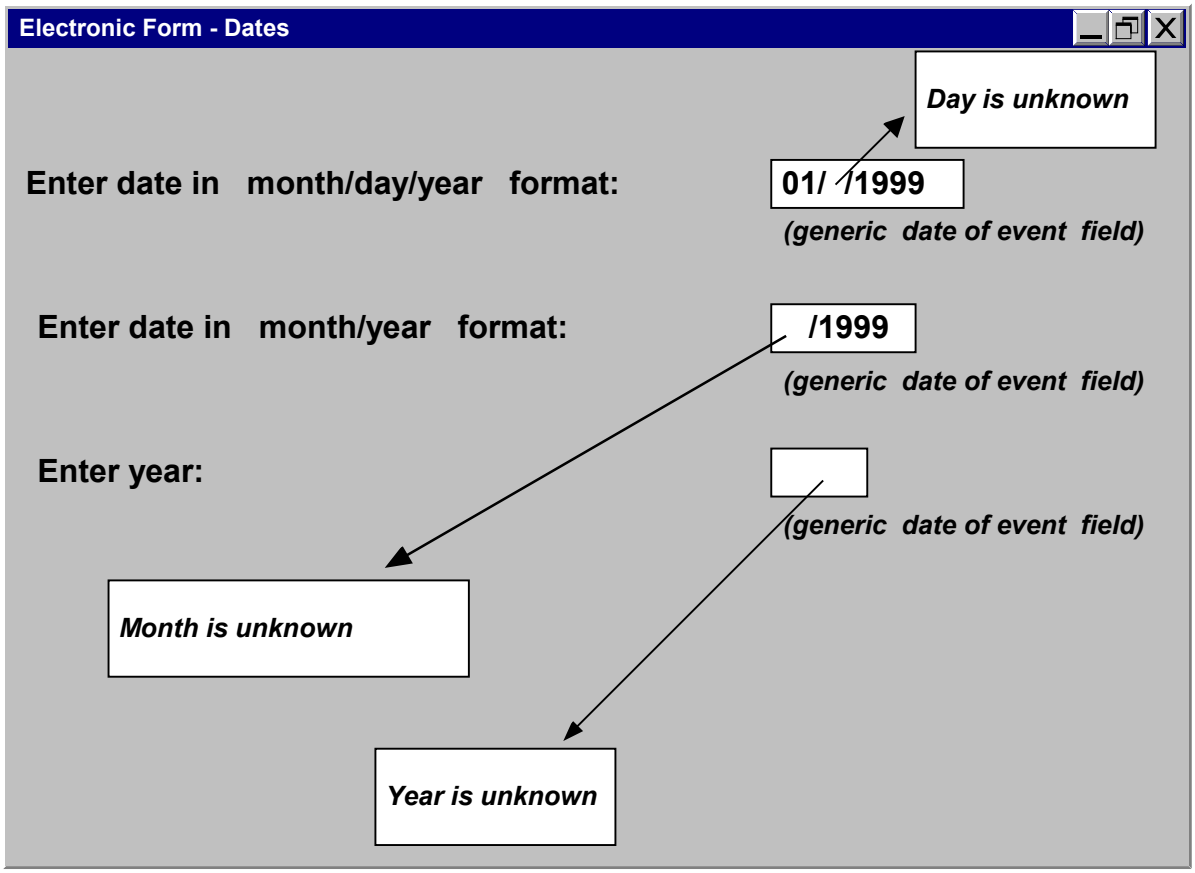


Figure 6: **Completed Electronic Form used to collect dates where some of the date components are unknown. Note that example includes all three types of date formats: month/day/year, month/year, and year.**



Data Processing: Validations and Edit Checks

- Dates are stored in character format.

- Three date formats are supported for collection of month/day/year (MM/DD/YYYY), month/year (MM/YYYY), and year (YYYY) where MM represents the month component, DD represents the day component, and YYYY represents the year component.

- The display format differs from the storage format for both month/day/year and month/year dates, as noted below:

Dates storing month/day/year	Display format:	MM/DD/YYYY
	Storage format:	YYYYMMDD
Dates storing month/year	Display format:	MM/YYYY
	Storage format:	YYYYMM

- Valid values for the 2-character month (MM) component range from 01-12.

- Valid values for the 2-character day (DD) component range from 01-31.

- Valid values for the 4-character year (YYYY) component range from 0001-9998.

- Blanks are acceptable values for each component (MM, DD, or YYYY) when the particular date component is missing. However, only certain combinations of known and unknown date components are valid in the CIPHER date definition, as described below:

Unknown Dates in "YYYYMMDD" form storing "month/day/year"

a) The date can be missing entirely. In this case, YYYY=' ', MM=' ', and DD=' '. The data are stored as YYYYMMDD=' '.

b) The date can be missing partially in two valid ways:
Day (DD) is unknown but month (MM) and year (YYYY) are known.
In this case DD=' ', MM='MM', and YYYY='YYYY'.
The data are stored as YYYYMMDD='YYYYMM '.

or

Day (DD) is unknown and month (MM) is unknown, but year (YYYY) is known. In this case DD=' ', MM=' ',YYYY='YYYY'. The data are stored as YYYYMMDD='YYYY '.

Unknown Dates in "YYYYMM" form storing "month/year"

a) The date can be missing entirely.
In this case, YYYY=' ', MM=' '.
The data are stored as YYYYMM=' '.

b) The date can be missing partially in one valid way:
Month (MM) is unknown but year (YYYY) is known.
In this case MM=' ', and YYYY='YYYY'.
The data are stored as YYYYMM='YYYY ' .

c) The combination of known month (MM) and unknown year (YYYY) is **not valid.**

Unknown Dates in "YYYY" form storing "year"

In this case, YYYY=' '.
The data are stored as YYYY=' '.

- A majority of the management of electronic entry of Date data can be performed through the system control for the Date data concept. The system control provides entry controls supporting character format dates as well as entry of missing date components. For more information on entry control features, refer to the Date control documentation within the System Architecture Guide.

Data Processing: From Hardcopy to Storage

The following example illustrates the flow of information from data collection on the hardcopy form, to data entry into the electronic form, to validations and storage in the database. Refer to Figure 7 for an illustration of Date data flow where all components of the Date are known. Refer to Figure 8 for an illustration of Date data flow where some of the components of the Date are unknown.

The process begins with a blank Hardcopy data collection form used to collect Date:

The Date information is captured on the form, creating a completed Hardcopy data collection form:

The process continues with a blank Electronic form/data entry screen used to capture Date:

The value from the hardcopy form is entered into the Electronic form/data entry screen and then the edits and validations are performed on the Date:

The completed Electronic form/data entry screen is redisplayed and the Date data are stored in the database.

Figure 7: **Completed Electronic Form to Storage where all date components are known. Note that example includes all three types of date formats: month/day/year, month/year, and year.**

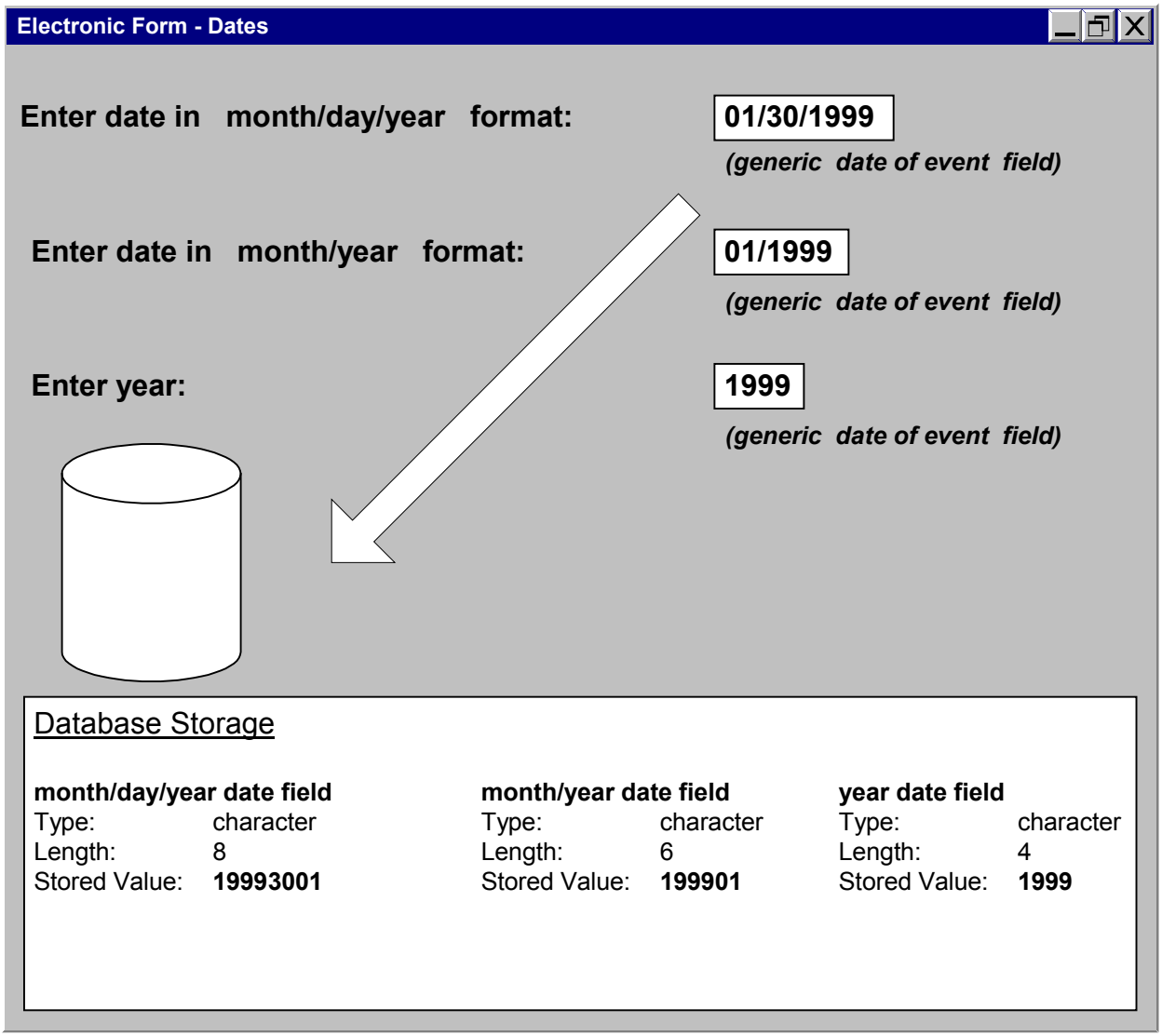
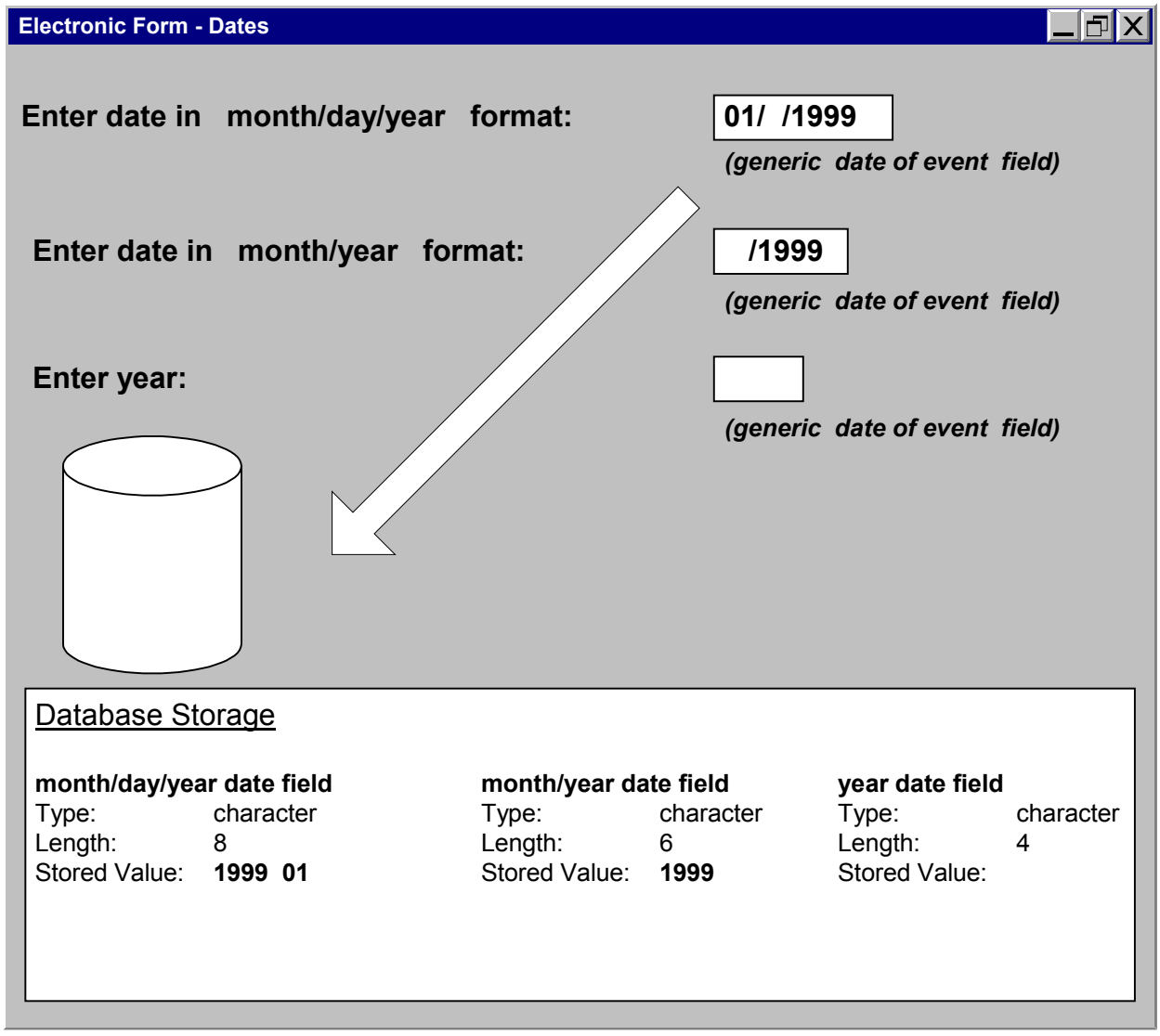


Figure 8: **Completed Electronic Form to Storage where all some date components are unknown. Note that example includes all three types of date formats: month/day/year, month/year, and year.**



Data Transmission: Electronic Data Interchange

Note: EDI sections are under construction.